

## PATENT SPECIFICATION



Application Date: Aug. 23, 1943. No. 13734 43.

560,222

Complete Specification Left: Sept. 6, 1943.

Complete Specification Accepted: March 24, 1944.

## PROVISIONAL SPECIFICATION

## Improvements relating to Concrete Constructional Members

We, THE OBO CONSTRUCTION COMPANY LIMITED, a British Company, and ARTHUR ETHELBERG ALLINGTON OATLEY, a British subject, both of the Company's address, 5 Potter's Grove, South Lane West, New Malden, Surrey, do hereby declare the nature of this invention to be as follows:—

This invention relates to concrete constructional members, particularly for use in the formation of concrete lintels over doorways, windows and the like, although it may be used also in the making of concrete beams and girders. It is the object of the invention to provide a form of constructional member or block which will enable concrete lintels and the like to be made without the necessity of any shuttering.

In carrying the invention into effect, channel-shaped blocks are moulded in concrete and are adapted to be placed on scaffolding or any temporary supporting members with the channel elements abutting end to end. The channels may have depressions or grooves moulded in them for keying the concrete to them, and to receive nails, rods or the like for keeping the channels in register, and they may have a roughened surface for holding plaster or other coating materials.

According to this invention, channel-shaped blocks for the purpose in view are moulded with one or more undercut grooves in each side thereof, either parallel to the base or inclined thereto, or similar channels may be moulded in the base itself for keying the concrete to the blocks. A mould for forming the blocks with such undercut grooves has bevelled rods sliding in guideways upon the core of the mould, the rods being in position during the moulding and being drawn out after this so as to enable the core to be removed.

In a preferred construction the mould has hinged sides and the core has collapsible walls which facilitates the removal of the mould from the moulded block, leaving this standing on a pallet on which the mould is laid.

In one such construction the outer part of the mould consists of a base portion

and two sides which are hinged together so that when closed they embrace three sides of the channelled block to be moulded. The outer part of the mould is stood up on end on the pallet board, and the inner part forming the core is fitted into it from the open side. This inner part consists of a base board with a panel thereon having hinged to it two side members between the outer ends of which are hinged two end members, these end members in turn being hinged together. The end members are bevelled at their outer ends so as to allow them to move inwards when pulled towards the base of the block. When the end members are pulled in this way they draw the outer ends of the side members towards one another, so pulling them away from the moulded inner surface of a concrete block and facilitating the removal of the core. The base portion of the core preferably projects beyond the ends of the side members forming the outer part of the mould, and has battens thereon which project so as to engage around the side walls to hold them firmly in place. Hook members or other means of attachment are provided for connecting the sides of the mould to the ends of the base, so holding the parts assembled. A lid or cover is then provided with a projecting portion to fit into the space between the sides and ends of the core when extended so as to keep them extended and to prevent concrete from falling within the core when the mould is being filled. In order to facilitate the contraction of the core a rod is preferably provided extending through a hole in the base and in the panel thereon, and with a hooked end engaging with a staple on one of the collapsing end members of the core. When this rod is pulled by a knob from the outside it causes the core to collapse ready for removal.

If undercut grooves are to be formed in the moulded channel-blocks, bevelled rods are provided of the desired cross-sectional form and are guided on the side members of the core or on the end members thereof or both by strips connected to the rods and working in guide channels

[Price 1/-]

formed in the core. The rods are in place during the moulding, but have projecting ends at the top by which they can be withdrawn after the moulding operation

5 and before the core member is collapsed.

In moulding the channel-shaped blocks it is preferred to use a comparatively dry mixture of cement and sand which can be pressed down in the mould and smoothed 10 off at the top, allowing the core to be collapsed and the mould removed without delay, leaving the channel-shaped block resting by one end on the pallet. It can be left like this to dry and set for a day 15 or two, and should then be sprayed with water to ensure its complete setting. The blocks are left on the pallets to mature, and are ready for use after two or three 20 days further.

Additional depressions may be made in the side walls of the blocks after the core is removed by pressing in suitably shaped tools or members into the face of the

concrete at intervals. The end of the core may also have projections upon it for 25 forming depressions in the surface which will be at the base of the channel when the block is in use. The base and sides of the mould and the faces of the core may be lined or covered with sheet metal 30 if required to preserve their form more permanently when in use, and if a collapsible core is used, flexible metal strips may be provided between the base and the hinged side members of the core 35 which will cover the joint lines between the side members and the base panel, and will bend and lift sufficiently to allow for the hinging movements of the side 40 members.

Dated this 23rd day of August, 1943.

For the Applicants:

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## COMPLETE SPECIFICATION

### Improvements relating to Concrete Constructional Members

We, THE OBO CONSTRUCTION COMPANY LIMITED, a British Company, and ARTHUR ETHELBERT ALLINGTON OATLEY, a British subject, both of the Company's address, 45 Potter's Grove, South Lane West, New Malden, Surrey, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained 50 in and by the following statement:—

This invention relates to moulds for moulding channel-shaped concrete constructional members or blocks such as are used in the formation of concrete lintels, 55 over doorways, windows and the like or in the making of concrete beams and girders. Such moulded concrete members or blocks are normally laid end to end on a suitable temporary support with reinforcement such as metal rods laid 60 therein and are filled with concrete. It is the object of the present invention to provide a convenient form of mould with hinged sides and a collapsible core in 65 which the channel-shaped blocks can be made. A further object is to provide the mould with means for forming dove-tailed grooves in the walls of the moulded blocks in order to assist in keying the 70 concrete filling to the blocks when it is introduced into their channels.

The mould according to this invention has three sides of which the middle one is connected by hinges to each of the 75 other two, and a fourth side carrying a core which is collapsible inwardly, the core being expanded when in use and

being collapsed by pulling inwardly parts thereof connected by hinges to facilitate its extraction with the fourth side of the 80 mould after a moulding operation. A mould in accordance with the present invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a perspective view of the 85 mould in the closed condition after a block has been formed therein;

Figure 2 is a plan view of the mould shown in Figure 1;

Figure 3 is a corresponding view showing the parts of the mould opened out to 90 release the moulded block; and

Figure 4 is a cross section on an enlarged scale showing the way in which the dove-tailed grooves in the sides of the 95 block are moulded.

The sides 24 of the mould are hinged to the back or base 25 by hinges 26, each of these parts being preferably provided with a metal lining 27. The core con- 100 sists of a base 28 with a panel 29 upon it carrying two side boards 30 connected to the panel 29 by hinges 31. Two other boards 32 with chamfered ends are hinged together at 33 and connected to the ends 105 of the boards 30 by hinges 34. One of the boards 32 has a metal loop 35 fixed in it and engaged by the hooked end of a rod 36 which extends through holes in the base 28 in the panel 29 and may have a 110 knob 37 on its outer end to serve as a handle. Hook members 38 are provided for holding the base of the core block in position in the mould when assembled, as

in Figures 1 and 2. The base 28 has battens 39 at each end which embrace the side boards 24 of the closed mould so that the parts are locked together when the hook members 38 are engaged. The core is expanded to a rectangular shape by pressing in the rod 36 by the handle 37, and a lid 40, Figure 1, is applied to the top of the core to fit between the members 29, 30 and 32 so as to hold them expanded.

When the parts of the mould are so assembled, concrete is filled into the space between the mould proper and the core to form a channel-shaped moulded block, the top being smoothed down with a flat tool or board. When the mould is to be removed the hook members 38 are disengaged and the knob 37 is pulled out, causing the core to collapse as shown in Figure 3, whereupon it can easily be removed. The sides 27 of the mould can then be pulled outwardly as shown in Figure 3, and the mould can be removed, leaving the channel-shaped block standing up on one end on the pallet 12.

In the example of construction shown the boards 30 and 32 which form the inner faces of the sides and base of the channel block are not lined with metal, but a flexible lining of strip metal 41 is provided at each side of the panel 29 on the base 28 and extending up a little way over each of the side members 30, as seen in Figures 2 and 3, where the nails or screws 42 are shown securing the ends of the metal strips 41 to each of the side members 30. The metal strips 41 cover the joint lines between the parts 29 and 30 and form a rounded surface at the inner edges at each side 10 of the moulded block. When the core member is collapsed as shown in Figure 3, the metal strips 41 are flexible enough to rise a little from the base 28 to enable the sides 30 to hinge inwardly without undue restraint.

The hinges 33 in this case form the depressions in the moulded block which serve for keying successive blocks together by the insertion of rods or nails in the depressions when the blocks are assembled in line to form a lintel or the like.

In the example of construction shown, the dovetailed grooves at 23 in the sides 10 of the moulded block are formed by bevelled metal bars 43 which may have L-shaped ends, as seen in Figure 1, to facilitate their withdrawal. These bars are guided in the sides 30 of the core member by being connected by screws 44 to strips 45 which work in recesses in the boards 30 and are held in place by overhanging metal strips 46 as best seen in Figure 4. When the mould is made up

the rods 43 are inserted before the concrete is filled in. The guide strips 45 do not project above the tops of the side boards 30 so that they do not interfere with the fitting of the lid or cover 40, only the rods 43 being extended upwardly to form handles. After the moulding operation the rods 43 are withdrawn, leaving the dove-tailed grooves in the inner faces of the side walls 10 of the moulded block. After the rods 43 have been removed, the hook members 38 can be released, and the knob 37 pulled out to collapse the core, whereupon the core can be removed and the mould opened out, as in Figure 3.

The outer surfaces of the channel blocks may be made smooth or roughened as required, depending on the lining 27 used in the moulds.

The rods 43 are shown arranged to slide vertically in the core of the mould, but they can be set at an angle if required, and two or more such rods may be disposed at each side of the mould or in the parts 32 which form the base of the channel for moulding undercut grooves therein. Any other means may be employed for holding the parts of the mould together when in use, and the hook members 38 have been indicated only by way of example. It will be evident that the channel-shaped blocks may themselves be reinforced if desired, for example by introducing wire netting into the moulds, but this is not found generally to be necessary.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A mould for making channel-shaped blocks for use in forming concrete beams, lintels and the like, said mould having three sides of which the middle one is connected by hinges to each of the other two, and a fourth side carrying a core which is collapsible inwardly, the core being expanded when in use, and being collapsed by pulling inwardly parts thereof connected by hinges to facilitate its extraction with the fourth side of the mould after a moulding operation.

2. A mould according to claim 1 where in the side members of the core have grooves forming guides for strips attached to sliding rods, which rods are shaped to form undercut grooves in the inner faces of the channel-shaped blocks, said rods being pulled out after a moulding operation before the core is collapsed and withdrawn.

3. A mould according to claims 1 and 2, constructed and adapted to be used

substantially as described with reference  
to the accompanying drawings.

Dated this 6th day of September, 1943.

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Leamington Spa: Printed for His Majesty's Stationery Office, by the Courier Press.—1944.

FIG. 2.

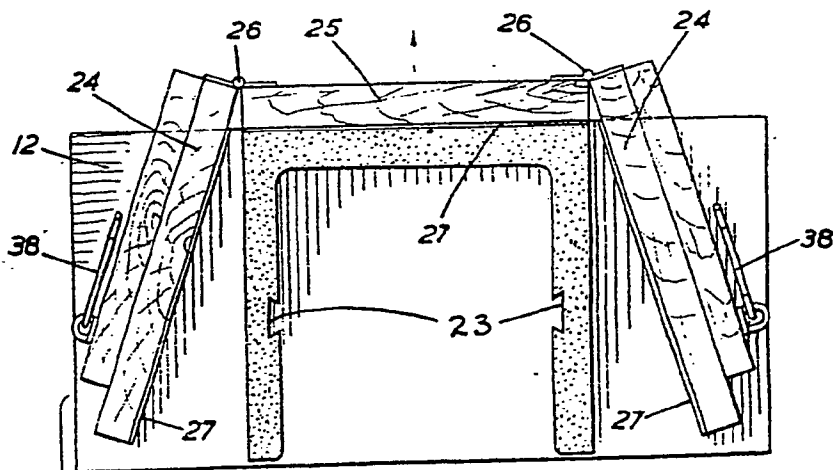
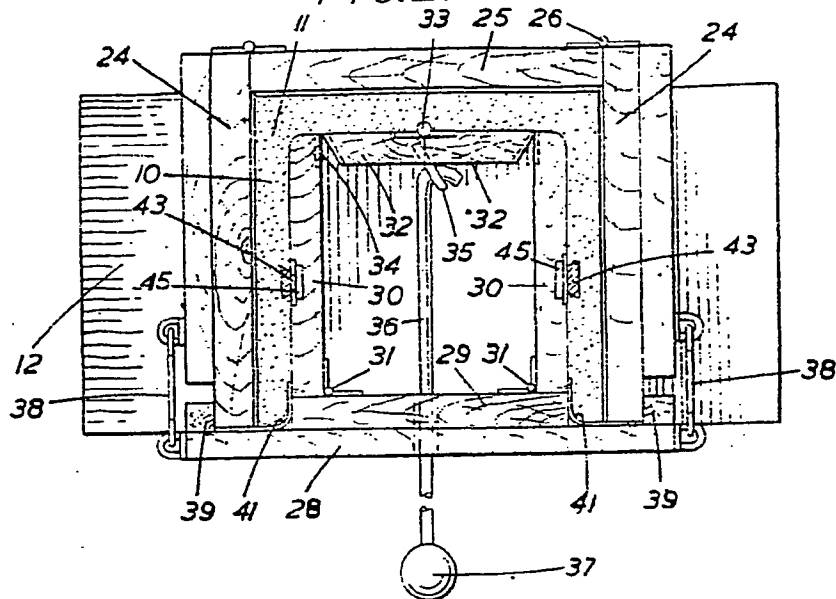


FIG. 3.

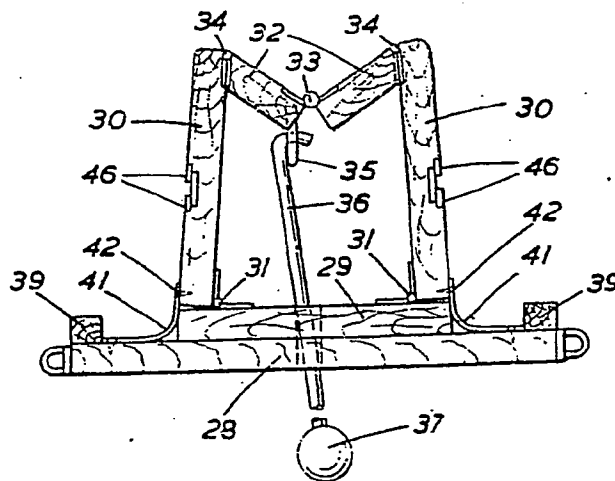


FIG. 4.

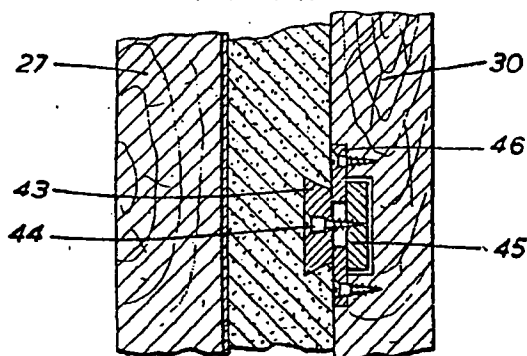
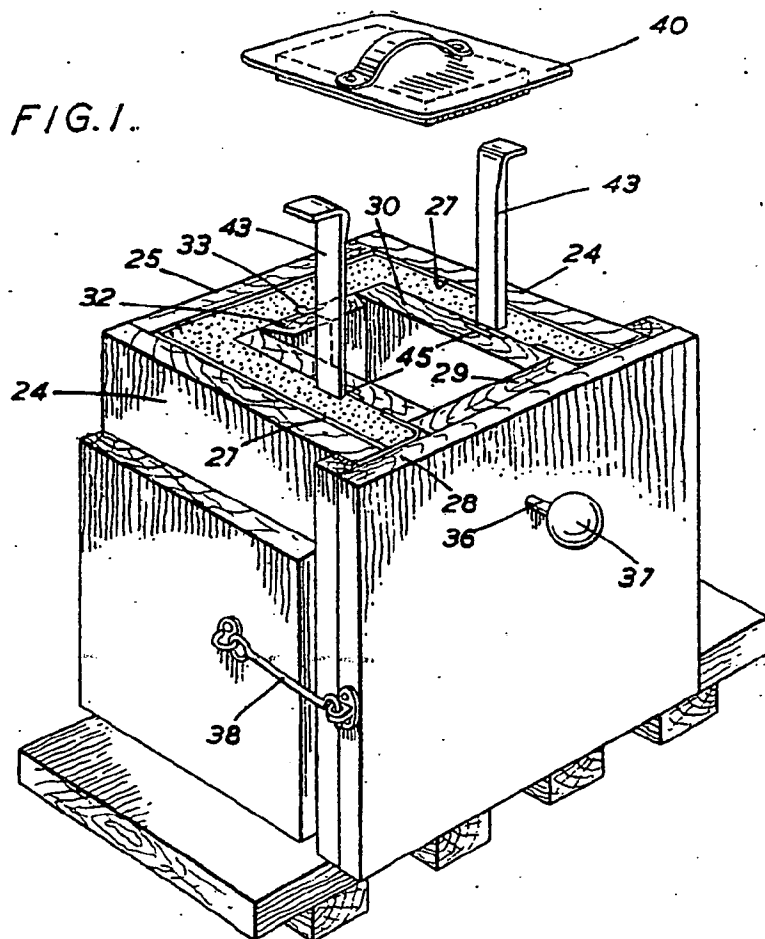


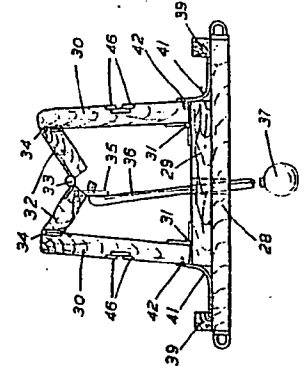
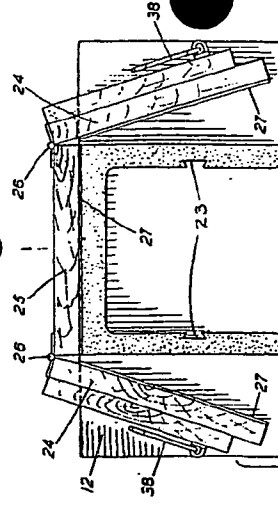
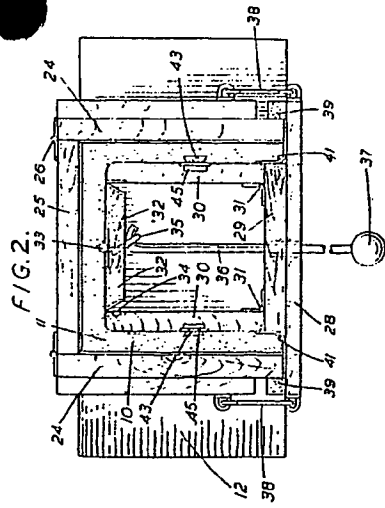
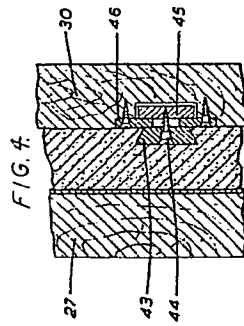
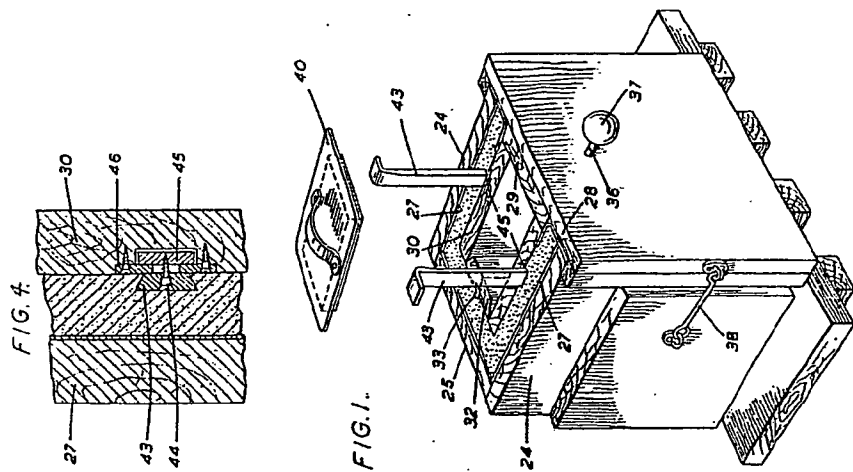
FIG. 1.



[This Drawing is a reproduction of the Original on a reduced scale.]

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SHEET 1



[This Drawing is a reproduction of the Original on a reduced scale.]